Volume Three, Number Three September, 1969

THE RHODESIAN JOURNAL

of

ECONOMICS

The Quarterly Journal of the Rhodesian Economic Society

INDUSTRY IN RHODESIA

A TWO-DAY SYMPOSIUM

PART TWO

PAPERS **Page**

Volume Three, Number Three September, 1969

THE RHODESIAN JOURNAL

of

ECONOMICS

The Quarterly Journal of the Rhodesian Economic Society

INDUSTRY IN RHODESIA

A TWO-DAY SYMPOSIUM

PART TWO

PAPERS **Page**

Volume Three, Number Three September, 1969

THE RHODESIAN JOURNAL OF ECONOMICS

PAPER No. 7

PAPER No. 8

PAPER No. 9

PAPER No. 10

PAPER No. 11

Professor J. L. Sadie

Professor Jan Sadie is Professor of Economics at the University of Stellenbosch. He has acted as economic adviser to the Rhodesian Government publishing a report in 1967 on "Planning for the Economic Development of Rhodesia". He is currently a member of the Commission of Enquiry into Fiscal and Monetary Policy in South Africa.

Paper Number Eleven

ECONOMIC GROWTH THROUGH INDUSTRIALISATION

PROF. J. L. SADIE

1. Evidence of growth

Arising from the experience of the pioneers of industrialisation, who have become the twentieth century's highly industrialised states, high rates of long-term economic growth have come to be, not only associated with, but attributed to, the development of the manufacturing sector whose contribution to the Gross Domestic Product (G.D.P.) has shown very considerable increases over periods of decades in these countries. The development involved relative and absolute shifts in the allocation of economic resources among the various economic sectors which, for ease of exposition, can be classified into the three broad categories of primary, secondary and tertiary industries. The available evidence in this connection would suggest the following general pattern:

(a) the share of the primary sector in the use of labour and capital in the developed economies diminished to approximately the same extent as its share in G.D.P., so that its productivity would have increased at the same rate as that of the economy as a whole;

(b) the share of the secondary sector in G.D.P. grew more rapidly than its share in economic resources, and that its productivity must have risen at rates considerably higher than that of the entire economy;

(c) while the situation with respect to the tertiary sector is not easily identifiable it seems justified to conclude that its share in the use of economic resources increased more rapidly than its contribution to total product, so that its productivity must have grown at a lower rate than that of the economy in the aggregate.*

2. Determinants of growth

Statistical analyses of the determinants of growth differentials among nine Western countries during 1950–1962 appear to lend support, even if indirect, to the conclusion to be drawn from the above schema, viz. that growth rates are increased by the transfer, in relative or absolute terms, of factors of production into the non-agricultural sectors if not into manufacturing as such only. In the United Kingdom, which has a long history of industrialisation, and where the share of agriculture in the national product has, by 1950, dwindled to 5 per cent, and the increase in output per unit of input came to 1.18 per cent p.a. during 1960–1962, the contraction of agricultural inputs was found to be responsible for only 0.06 percentage points of the total. In Italy at the other end of the spectrum, where agriculture's relative contribution to national product was more than five times higher, output per unit of input grew at a rate of 4.30 per cent p.a. of which 1.04 percentage points were attributable to a contraction of agricultural inputs†; a ratio of some 1 to 4 compared to the U.K.'s ratio of 1 to 20.

---

* Compare Kuznets, *Modern Economic Growth* (Yale Univ. Press 1966), Chapter 4. His second sector which he calls *Industry* includes mining, transportation and communication in addition to manufacturing, construction, power and light which latter three are included in our *Secondary* sector.

† Dennison and Poullier, *Why Growth Rates Differ—Post-war Experience in Nine Western Countries.* (Brookings Institution, 1967), pp. 298–316.

For Japan it was found that virtually the whole of the increase of labour productivity since the thirties originated in Manufacturing and the Services sector;* In Table 1 are set out the estimated contributions of four economic sectors to the growth in the average productivity (value added) per worker in South Africa.†

TABLE 1

ANNUAL INCREASE PER CENT IN AVERAGE REAL PRODUCT (VALUE ADDED) PER WORKER AND RELATIVE CONTRIBUTIONS OF FOUR SECTORS

Period	*Aggregate increase*	*Agri-culture*	*Mining*	*Manufac-turing*	*Services*
1919–29	3.0	0.7	0.7	0.4	1.2
1945–55	2.6	0.5	0.5	0.8	0.8
1955–65	2.7	—0.2	0.7	1.1	1.1

From these figures it would appear that while Services were the leading sector during the twenties, productivity in Manufacturing moved ahead at the same speed as the latter since the end of the Second World War, and exceeded to a considerable extent the growth in product per worker in Agriculture and Mining. In fact, during 1955–65 Agriculture made a negative contribution to value added per worker, its figure having declined from 0.7 during 1919–29 to 0.5 percentage points during 1945–55, ending up with —0.2 in the succeeding decade.

Not having had the required price indices to deflate magnitudes presented in current values, similar calculations could not be undertaken for the Rhodesian economy; and recourse must be had to indirect evidence. Assuming that the changes in the Rhodesian Index of Industrial Production relating to the Manufacturing group only is correlated with changes in value added at constant prices, we find that the level of manufacturing output (1964=100) rose from 76.1 in 1959 to 107.8 in 1965, the last year before sanctions took effect. During the same period the index of employment, 1964=100, increased from 100.1 to 106.2 in the case of Europeans, Africans and Coloureds and declined from 112.8 to 104.7 in respect of Africans, or from 110.5 to 105.1 for all workers combined. This yields a growth rate of 6.9 per cent per annum in the Manufacturing product per worker, compared to an average annual increment of 4.8 per cent in the G.D.P. per worker in the money sector of the economy, unadjusted for the effect of the increase in prices which boosted the latter. The fact that the differential may be a function of differences in the amount of capital employed per worker, does not detract from the significance of manufacturing as a growth sector unless it could be proved that capital was in fact mis-allocated as between this sector and the others, or some of them, in the sense that its employment in the latter would have produced results equal to those in manufacturing. This seems very unlikely.

3. Causal factors involved

It will be appreciated that industrialisation as an instrument or medium of growth derives its significance partly from its own merits, and partly from

* Ohkawa en Rosovsky, "Recent Japanese Growth in Historical Perspective", *American Economic Review*, Papers and Proceedings, May 1963, p. 579.

† Krogh, "Die Ekonomiese groeiproses in Suid-Afrika", *S.A. Akademie*, Referate gelewer op Algemene Vergadering 1966.

the demerits or limitations of applying factors of production in alternative economic activities. Regarding, in the present context, changes in the services sector as "derived" and those in the primary and manufacturing sectors as "autonomous", it is the latter two which will be juxtaposed. Both demand and supply factors are involved.

It is common cause that the income elasticities of demand for food and other staple consumer goods are low compared to those for goods produced in the manufacturing sector and some of the services. For example, consumption and family expenditure data available in South Africa would indicate that a 50 per cent increase in real income per capita may raise expenditure p.c. on motor transport by 168%, on cigarettes by 88%, on clothing by 63%, on bread by 15%, and actually reduce the p.c. consumption of mealie meal by 7%. The higher the rise in average income the greater these disparities become; the low elasticities being depressed and the higher elasticities being raised. In the result a major part of an increase in per capita income, at least above a certain minimum, will be channelled to the manufactured goods to sustain a larger increment in their production than in that of agriculture. Changes in tastes, which as a rule do not favour staple goods, usually reinforce the effect on demand of differential income elasticities.

4. Technological advance and innovations

However, a long run increase in demand cannot occur unless income is increased by means of improvements in supply conditions. In this technological advancement and innovations have been, and are, of major importance. If economic growth consists of an augmentation of scarce economic resources, and a more productive utilisation of these resources, the contribution of technology stands out. Industrialisation could in fact be identified with technological advance inasmuch as the latter comprises new ways of combining factors of production and the production of new goods and services. "Science-based technology, the major source of economic growth", in the words of Kuznets, "has reduced man's dependence on specific scarce natural resources; has developed methods of controlling some elements in natural endowments that impede growth; and has facilitated the transfer of useful knowledge from historically conditioned points of origin to the rest of the world. Resources are a function of technology . . .".* Technology thus augmented resources and permitted existing goods to be produced at lower costs and new consumer and capital goods to be created.

It is, of course, true that technological advancement and innovations have not been confined to economic activity in the secondary sector. The latter turned out new agricultural machinery and fertilisers which, together with new strains of seed and animals, promoted productivity in agriculture, while improved methods of extracting minerals from ores did the same for mining. In so far, however, as agriculture and mining are to some extent "land-intensive", they are subject to a constraint which does not apply in the case of manufacturing or secondary industry. Not that the latter is not subject to diminishing returns to size or scale, but it does seem to offer better possibilities for a postponement of that stage, or for a forward shifting of it to higher levels of production. This is reflected in the continual changes in the composition of the manufacturing sector. When a given industry has exhausted

* Kuznets, "Learning from the Growth Processes of the Developed States" in *Fiscal and Monetary Problems in Developing States*, Krivine (Ed.) (Praeger, N.Y., 1967), p. 4.

the opportunities which had been offered to it by technological progress, the incidence of the latter shifts to some other or new industries in the sector, benefiting them in turn. Those which are directly dependent on agriculture for their intermediate inputs tend to reach the stage of diminishing returns sooner than others.

5. Economies of scale in manufacturing

The capital intensity of secondary industry in conjunction with the indivisibility of capital, which could be a handicap in a small market, makes for increasing returns or economies of size which cannot evidently be easily matched by the primary sectors. The extreme contrast is with traditional peasant farming where the limited size of units has to be taken for granted. To the extent that the relative costs and prices of industrial goods are reduced, while the price elasticity of demand for them is fairly high or higher than that of agricultural products, higher living standards and further industrialisation will be promoted.

The resulting increase in income per capita will benefit the agricultural sector, raising its income or preventing a fall in it, since part of the higher incomes derived from industrial activity will go into primary products, just as income earned in the production of the latter will be spent in part on manufactured goods, but with the mutual support favouring the primary sector.

The substitution in supply involved in industrialisation, and the resulting supply-induced change in demand, on the other hand, restricted the growth potential of the primary sector, and raised, *mutatis mutandis*, the status of manufacturing as growth factor. Well-known examples of such substitution are chemical fertiliser for manure, tractors and automobiles for draft animals, petrol for wood and the many synthetic articles for the natural product. Wants which had been satisfied in former times by agricultural products are now being satisfied by industrial goods. The latter, in addition, are susceptible to change through innovation to a greater degree than the former.

The existence of complementarity in production and the concomitant external economies favour manufacturing. They represent a self-sustaining growth force in that development becomes a function of itself. This force is strengthened by the accompanying concentration of the population in urban centres, who then demand goods and services which were not essentials in rural life, or not to the same degree, such as processed or preserved foodstuffs, sanitary services, recreation, transportation and distribution. When industrialisation has created new opportunities for the non-domestic employment of women, this adds to the demand for goods and services to alleviate the burden of the housewife or as a replacement for her domestic tasks.

6. Comparative advantage theory

It can be argued that some of the constraints in demand and supply, which seem to redounded to the detriment of the primary industries and to the advantage of manufacturing or secondary industry, are lifted or very much reduced in vigour when the economic activities in an individual country are related to those of the world as a whole. With the introduction of international trade the world economy becomes the potential source of demand for a country's produce, and of supply for its needs. Specialisation in those economic activities in which it has a comparative advantage and importing goods in the production of which it has a comparative disadvantage, will maximise its rate of growth. Consequently, a country which has a comparative advantage in the primary industries will reduce its rate of growth through industrialisation.

By implication the industrially underdeveloped countries might lose if they were to industrialise.

The response to this argument is, of course, that the incremental comparative advantage, in a new industry, a dynamic quantity, need not be the same as the historically determined, or static, average advantage in existing enterprises. And how is a country to know beforehand that it will not be able to operate an internationally competitive manufacturing industry; that is, if it has not yet experimented with it, and over a sufficiently long time? The basic weaknesses of the thesis are bound up with its underlying implicit or explicit assumptions of which the following are the most important.

That output per factor of production employed is the dominant element in growth, which would either lead to an increase in the volume of inputs, or if not, would more than neutralise any employment-reducing effect it may involve; that structural unemployment or underemployment does not exist; that the quality of human beings as economic material is a given quantity; that the process of development does not create self-generating forces; that competition between national markets is not restricted; that perfect mobility of factors of production obtain within countries, but not across international boundaries, implying that those in scarce supply in underdeveloped countries cannot be borrowed from the industrialised countries.

7. Limitations to comparative advantage approach

Since these assumptions are not realistic, the comparative advantage thesis while it should never be disregarded, cannot act as a guide to policy which inhibits industrialisation in the economically less advanced countries. The case against international trade, based on historic comparative advantage, as a medium for the achievement of economic growth in the latter, has been most eloquently argued by Raul Prebisch.* While it is true that the impact of low income elasticities of demand on the primary sector of an individual country can be counteracted by increasing the number of markets on which its products are sold, this possibility presupposes—

(a) a more rapid rise in productivity in the country concerned to reduce its costs and prices below those of competitors; or

(b) a substantial degree of complementarity in production as between trading partners—which admittedly did exist during pre-sanction days in the case of Rhodesia vis-a-vis the United Kingdom, and some other industrialised countries, with tobacco as the prime example in the trade; and

(c) the absence of substantial protection of their primary products by developed countries.

The fact is that the latter still have sizeable agricultural, and less often mining, sectors, in absolute if not in relative terms, which have also benefited from the technological revolution, and in some instances to a greater degree than in underdeveloped countries due to large-scale production. The protection afforded them by way of import quotas or tariff barriers further boosts their output, often carried out on marginal land, to reduce the international complementarity in production and the export opportunities of those countries

* U.N. *Towards a New Trade Policy for Development*, Report by the Secretary General of UNCTAD (New York 1964), pp. 11-26.

who presumably have a comparative advantage in the production of agricultural as well as mining products. Even where complementarity does exist, exports are restricted by means of internal taxes in the importing countries. To this must be added the influence of the development of synthetic substitutes for the "natural" products.

In the result the international trade in primary commodities has been growing at a much slower rate than trade in manufactures; for the period 1928–1960 the respective figures having been 1 per cent p.a. (exclusive of petroleum products) and 3.1 per cent p.a. although the former has on occasion been higher for short periods of time. Not the whole of the 1 per cent increase benefited the less developed countries, since the industrialised countries were partly responsible for the expansion in exports.

While it cannot be stated that the terms of trade of primary exporting countries will deteriorate of necessity there have been times when they have done so, while the demand and supply conditions offer grounds for expecting a downward trend. It has been estimated that between 1950 and 1961 underdeveloped nations suffered a 13,000 million dollar reduction in the purchasing power of their exports as a result of the deterioration in their terms of trade.* This cannot but have a severely restraining effect on growth.

Moreover, the instability in the earnings from exports of primary products, and dependence of the national income on conditions in foreign countries, mean that a nation has little or no control over its tempo of development. Some diversification through industrialisation reduces the limitations imposed on a country's economy.

Some of the problems mentioned above could be eliminated if the industrialised nations were prepared to retreat from their present policy position. They exhibit a conspicuous lack of enthusiasm for such reform.

8. The particular situation in Rhodesia

In Rhodesia industrialisation and urbanisation have a very special role to fulfil, which could have a much greater multiplier effect than in the mature economies. The Tribal Trust areas encompass half of the agricultural land of the country, and contain some 60 per cent of the African population (or 56 per cent of the total population), but produce only 22 per cent of the aggregate agricultural output and less than 7 per cent of G.D.P.† As a result of sanctions the subsistence sector has had to absorb rapidly increasing numbers during the past three years, and one conjectures that the marginal product of labour cannot be far removed from zero. Were modern farming methods to be employed these areas would undoubtedly have a growth potential. As it is, the inhabitants have a way of life which is anathema to economic progress and stymies strenuous efforts to commercialise farming. It is in any case unrealistic to expect that all members of a population's labour force could be efficient and progressive farmers. Just to prevent a reduction in the level of living and in the productivity of the land arising from the mining of the soil as a result of pressure of numbers, alternative employment must be found for the natural increase in the African male labour force of some 39,500 per annum.

A transfer of labour in these circumstances into manufacturing is bound to raise its marginal product, and evidently to a greater extent than if the transfer

---

* *Op. cit.*, p. 19.

† Based on 1965 data.

were to the modern agricultural sector. It does seem easier and less costly to develop the average African adult in the subsistence sector into an efficient industrial employee than into an efficient farmer unless perhaps, he is stripped of his entrepreneurial function in the latter capacity. In farming there is the temptation of reversion to the rut of the traditional way of doing things, which cannot be resorted to in an industrial enterprise where the unlearning of traditional methods has no or little relevance, and his activities are controlled by supervision and the tempo of the machine.

More important still, unbanisation involves a separation from the traditional way of life and the generation of new needs and demands which promotes the breaking down of the progress-inhibiting values. And thus new growth-inducing forces are released.

While the average earnings of Africans in different sectors of the Rhodesian economy do not reflect the probable wages of new entrants, and historical series cannot be used to predict their future course if the industrial distribution of the labour force and the economic structure are not going to remain the same, they can at least serve as indications of the opportunity differentials which exist, and have existed. In this regard we find the average earnings in 1968 to have been £72 in commercial agriculture, £161 in mining and quarrying, £222 in manufacturing, £191 in building construction, electricity and water, and £183 in services, though the latter included individual sectors such as banking, transport and communications where the figure was higher than in manufacturing. In subsistence agriculture the average income per family head woul dprobably not be higher than £50. Over time average earnings, translated into indices, moved as follows:*

TABLE 2

INDICES OF AVERAGE EARNINGS OF EMPLOYED AFRICANS

	1959	1965	1968
Commercial Agriculture	100	118.6	122.0
Mining and Quarrying	100	134.2	145.0
Manufacturing	100	180.9	193.0
Building, Construction, Electricity, Water	100	162.4	175.2
Services	100	150.0	166.3

The trend in the case of Europeans, Asians and Coloured persons is similar. The relatively high average figure for manufacturing, the more rapid rise in its level than in that of other industries, and in the volume of manufacturing output than of the G.D.P. as a whole, as quoted in section 1, offer some evidence for the presumption that the rate of economic growth would have been higher had it been possible for more labour to have been absorbed into this industrial sector.

As it is, despite a reduction in its African and aggregate labour force between 1959 and 1965, the share of manufacturing in the G.D.P. rose from 15.8 per cent to 18.9 per cent as shown in the following table:

---

* Source: *Economic Survey of Rhodesia* 1969, table 13.

TABLE 3

INDUSTRIAL ORIGIN OF THE G.D.P. (PER CENT)

	1959	1965	1968
Agriculture	19.2	18.7	15.2
Mining	6.5	6.8	5.7
Manufacturing	15.8	18.9	20.3
Building, Construction, Electricity, Water	10.7	8.7	10.4
Services	47.8	46.9	48.4
	100.0	100.0	100.0

During these years it exerted its leadership in growth inducement in the form of a rising output per unit of labour input, and not in the volume of labour inputs. For the economy as a whole, however, this was a period of diminishing employment. There is no doubt that manufacturing, or better still the secondary sector, has become the growth leader since 1965. After slumping to 17.7 per cent in 1966, the share of manufacturing in the G.D.P. rose to 20.3 per cent in 1968, and that of the secondary industry to 30.7 per cent compared to 27.6 per cent in 1965, partly as a result of the absolute decline in the contributions by the primary sectors, but mainly as a result of increased inputs. The labour force of manufacturing expanded by 13 per cent or 11,000 when the number employed in the whole of the modern sector rose by 1,000 only. In contrast with the pre-sanctions period, however, output per worker declined, the index of productivity per capita having moved from 102.6 in 1965 (1964= 100) to 94.8, 94.0 and 94.3 respectively in the three following consecutive years.* A change in the industry mix and the sacrifice of some of the economies of scale appear to have been responsible for this phenomenon.

9. Linkage effects

The growth effect which could have emanated from inter-industry relations if the 1965 input-output structure applied, can be derived from the forward linkage coefficients (the percentage of an industry's gross output supplied as intermediate inputs to the other domestic industries), and the backward linkages (intermediate inputs purchased from other domestic industries) together with the import content of gross output pertaining to that year. The relevant data, and those pertaining to the export content of gross output, are presented in Table 4.

TABLE 4

Industry	*Forward linkage*	*Exports*	*Backward linkage*	*Imports*
Agriculture	31%	41%	27%	3%
Mining	10	92	25	10
Manufacturing	32	32	39	28
Construction	35	0	45	13
Electricity and Water	38	25	14	4
Transport and Communications	47	40	27	8
Others	21	5	19	3

Source: The author's Report on Rhodesia (1967).

* The index of manufacturing production mentioned in section 1 divided by the index of employment.

Of the two linkages the backward linkage is the more potent in its growth-inducing effect, since it represents an assured market to suppliers, providing opportunities for farmers and businessmen to respond to, which the mere availability of domestic supplies of intermediate inputs, albeit a permissive factor, cannot do. It will be seen that the backward linkage coefficients of construction and manufacturing are the highest among the seven sectors distinguished in Table 4, while the forward linkages figures are just fractionally higher than that of agriculture. When the two linkages are combined to yield a repercussion, or industrial-interdependence, multiplier, it is found to be significantly higher for construction and manufacturing than those for the rest.

At the same time it will be observed that the intermediate inputs of these two sectors also have the highest import content, while two-thirds of their capital goods requirements are imported. Inasmuch as these represent expenditures on the products of foreign suppliers, they have a negative value in the growth equation. Regarded, however, as an indication of the potential opportunities awaiting nationals to produce substitutes, they have positive merit as a growth factor. Response to such opportunities may be said to constitute a second stage of import substitution which involves more difficult economic problems than the first stage in which the replacement of final consumer goods and possibly some processed basic raw materials (e.g. cement) is the main inducement.

In 1967 it was stated that "in view of the size of the domestic market, import substitution (with respect to Rhodesia alone) has, up to 1965 at least, not been the major incentive or goal in industrial development, as is evidenced by the large percentage of gross manufacturing output exported, namely 32 per cent, whose absolute value nearly equals the amount of value added, and by the small net consumption of foreign exchange. The temporary extension of the internal 'market' by way of federation had been the potent growth-inducing factor. The reversion of Malawi and Zambia to the category of foreign markets has now to be considered a structural change which, even after the present emergency has passed, may adversely affect demand from abroad for manufactures as for the other products and services."* It must be added, however, that a thorough and quantitative analysis of the determinants of industrial growth in Rhodesia will require the efforts usually put into the preparation of a master's or doctor's thesis.

10. Importance of import substitution

There is little doubt that the driving force since 1965 has been import replacement; industrialists having responded energetically to the opportunities offered by import control which had been forced on the economy by sanctions. Neither is there much doubt about the inexorable limitations imposed on the process by the small size of the local market, especially as it relates to final consumer goods. This has been evident in the 1965 composition of imports which was as follows:

---

* *The Report by J. L. Sadie on Planning for the Economic Development of Rhodesia*, pp. 8-9.

	£m	% of Total	% of total supply of each category (a)
Consumer goods	35.3	24	13
Intermediate inputs	77.3	52	30
Capital goods	24.2	16	47
Re-exports	12.4	8	—
	149.2	100	

(a) Exclusive of Government consumption.

Consumer goods imports constituted only 24 per cent of the total, and their contribution to the supply of goods and services used up in private consumption was no greater than 13 per cent. Even if a 100 per cent substitution by local industries had been possible the momentum of the process cannot, and apparently did not, last long. In addition it would be restricted by a lack of foreign exchange needed to finance the derived increased import demand for intermediate inputs and capital goods. Efforts at import replacement of the latter categories of goods again lead to an increased demand, initially at least, for imports of further inputs of an intermediary nature. Ironically enough, import substitution should not be expected to reduce the openness of the Rhodesian economy as reflected in an import coefficient of 42 per cent and an export-content of G.D.P. of 51 per cent in 1965.

Exports to sustain imports are thus a prerequisite to industrial development in Rhodesia.

In pre-sanctions days Rhodesia had been in the fortunate position of earning foreign exchange not only through the traditional export industries, agriculture and mining, but also, and surprisingly for a young country, from manufacturing, as well as electricity and water, transport and communications. It will, in all probability, be difficult to recapture the markets for the goods and services of the latter three sectors lost, or partly lost, during the past three years, and equally difficult to capture new markets for industrial exports in competition with the older developed countries.

11. Conclusion

The main responsibility for earning the bulk of the foreign exchange requirements will therefore have to rest on the traditional export industries, agriculture and mining.

Nevertheless the manufacturing sector shall have to attempt to earn at least part of its own foreign exchange needs, and in the process promote a more rapid rate of economic growth through realising some of the economies of size. To achieve this the following conditions will have to be observed:

There should be a maximal degree of standardisation; and linked to this the number of firms in an industry should be severely limited by way of either import control, or amalgamation of existing concerns, with a monopolies Board or similar institution as watchdog. As a practical example, the large number of automobile assemblers or manufacturers and models one comes across in the Republic should not be permitted in Rhodesia.

The adverse effects of import control in the form of less than optimum quality of goods has to be endured as a temporary phenomenon, reflecting the growing pains of the infant entrepreneur. Overtime quality improves.

The Rhodesian industrialists will have to embark on some aggressive selling campaigns in the neighbouring territories, in which the establishment of Rhodesian sponsored enterprises can play a part in promoting the sale of Rhodesian products. Concomitantly efforts should be made to achieve a maximum of complementarity in production, if the formation of a common market of Southern Africa is not considered a practical possibility.

Lastly, a significant rise in the productivity of agriculture and/or an increase in the exploration of mineral resources, which become known as a result of intensive exploration, seems to be an indispensable condition for economic growth through industrialisation. The remarkable progress achieved in these fields during the past few years augurs well for the future. The alternative enabling force, which is a regular and adequate inflow of foreign capital, can hardly be depended upon to support industrialisation as growth leader.

DISCUSSION OF PAPER ELEVEN

Mr. Bertram commented on Professor Sadie's figures showing a decline in output per worker in manufacturing. The market had shown such wide fluctuations in the 3½ years since 1965 that very often the industrialist had found himself under-employing labour and he thought this had a great deal to do with Professor Sadie's figures. He asked whether there was some conflict between Professor Sadie's exhortation to manufacturing industry to obtain the maximum degree of complementarity and his lack of enthusiasm for comparative advantage.

Professor Sadie said he did not think there was any conflict between the idea of complementarity between Rhodesia and South Africa (on the basis of some informal ad hoc agreement) and his attitude towards comparative advantage doctrine. He thought his approach meant increasing comparative advantage.

Mr. Wright queried Professor Sadie's remarks about agriculture and mining providing the bulk of the country's foreign exchange though industry should aim at providing at least some of its necessary foreign currency. Professor Sadie had said that to achieve this the maximum amount of standardisation would be needed and a limitation in the number of industries producing the same kind of goods. Did not this suggest the elimination of competition? Professor Sadie said this was a very difficult question. The reason for making these suggestions was not primarily to eliminate competition but to allow industry to achieve economics of scale, and to enhance the ability to export. The smaller the market the greater should be the standardisation. It was always a difficult problem to try and ensure that the monopolist did not abuse his position, but it seemed to him to be the price that—under the circumstances—had to be accepted, rather than having a lot of units duplicating and producing virtually the same thing. Each one then producing at a much higher unit cost than could be achieved with a restricted number of producers.

Mr. Siebert raised the issue of balanced growth. Professor Sadie had stressed the importance of the manufacturing sector in the growth of the Rhodesian economy and yet it was only in the last paragraph that he mentioned that an increase in the productivity of agriculture and mining seemed to be an indispensable pre-requisite for economic growth. He asked Professor Sadie to comment on the fact that it was only right at the end of his paper that he had mentioned the very important problem of the co-ordination of the various sectors.

Professor Sadie agreed that his last few comments could be taken to mean that balanced growth was desirable—in the sense of export expansion by the primary sector being necessary to provide foreign exchange for industrial growth. This did not necessarily mean balanced growth in the sense of equal growth in all sectors or equal growth in mining at the same time as in manufacturing, but you did need some kind of co-ordination. He stressed that the import coefficient tended to increase during the import substitution phase of industrialisation because of the derived demand for intermediary products. Eventually the import coefficient might be reduced for the economy as a whole but that would be a long time ahead. He thought that South Africa might now be reaching the stage where the import intensity might be reduced.

Mr. Siebert said he was really thinking of dualistic economies. He had two points in mind. First, if industry was to grow the purchasing power of the economy as a whole must also grow. A large sector of the economy was rural

and it was for this reason that he felt balanced growth to be necessary. His second reason was that if the terms of trade between the farm sector and the industrial sector deteriorated because of a shortage of agricultural produce the real wage level in the industrial sector must decrease and this would bring industrial expansion to a halt. This had been put off in Rhodesia because of the contribution of the European agricultural sector, but he did not see why this should continue indefinitely.

Professor Sadie replied that to some extent it would be preferable if you could achieve balanced growth in the sense of a dual economy with both sectors growing at the same time. Alternatively unbalanced growth could be used to draw surplus African labour from the Tribal areas into the industrial sector. On the terms of trade issue what was needed was an additional increase in productivity in the industrial sector to offset the rise in farm prices. Alternatively, the exchange rate could be devalued to enable the economy to cope with an increased wage level.

Mr. Handford referred to the paradox of the import substitution industries —the fact that import replacement industries led to a higher import bill. He asked how long such a process was likely to take and whether there was anything a country could do to shorten this time period.

Professor Sadie said he had no statistics on the various periods of the increases in import intensities. Perhaps three or four decades would be about right. There were no rules—it would depend on the progress of the manufacturing sector. Perhaps, if the market was small and import substitution ended very soon, this could mean that the period would be shorter especially if the size of the market induced production for export. This might be the case in Rhodesia. Rhodesia was better off in the respect that Rhodesia used to have a high export content of manufacturing production which meant that the mentality of Rhodesian industrialists in respect to exports was better than experienced in many countries undergoing import substitution industrialisaton.

Mr. Peter Staub referred back to the question of standardisation and the reduction of the number of firms in an industry. He felt that this would stultify the initiative that Rhodesian businessmen had traditionally shown and mentioned that many Rhodesian industries had started on a very small scale indeed. He thought that it would be a great tragedy if Professor Sadie's attitude were to become Government thinking.

Professor Sadie replied that under abnormal conditions existing at the present time he thought his approach was right, but over the longer term when things got back to normal this could be changed. The classic example in South Africa, he warned, was that of the motor assembly business. He agreed that if from the very beginning industries could export then there was no great need for this restriction.

Mr. Hawkins asked Professor Sadie to define economic growth because he had been brought up to believe that the real terms growth rate should at least approximate the growth of the country's population in order to maintain living standards. He was raising this issue because the Treasury had recently suggested that in order to maintain living standards in Rhodesia a growth rate of 1½% of G.D.P. was necessary.

Professor Sadie replied that if one wanted to retain average standards of living you needed a growth rate in real terms at least equal to the growth rate of the population. But you could also divide the economy into two sectors and change your calculations accordingly provided you accepted that the people in the less developed sector were satisfied with their existing standards

of living. He defined economic development (rather than growth) as the process whereby the national product is increasing so as to give rise to increasing standards of living which are brought about by an increase in the amount of capital available to the population continued over a sufficient number of years so as to have the character of a self-sustained process.

Professor Lombard said he wondered whether such definitions did not mix up the political and the technical aspects of growth. Just because population was growing faster in one country than in another did not mean that the country with the slower growing population was in fact expanding more rapidly. He thought it better to speak about a growing economy if growth was such as to generate sufficient savings to enable national output to expand as a result of domestic capital investment. This did not necessarily have to be qualified by the increase in the population.

Professor Sadie commented that for growth to be meaningful it must be faster than the rate of population growth. Growth could always be stimulated by external rather than domestic capital so growth could be achieved without domestic accumulation of savings. Thus the savings ratio need not necessarily reflect the country's growth potential.

In his summary, Mr. Bertram said he had been given a very difficult task indeed. All of the papers presented had arrived at very similar conclusions, he thought—differing more in their degree of emphasis than anything else. Professor Sadie's main theme had been that although the primary industries must for a long time to come be the export leaders, nevertheless the growth point in economic development was going to be secondary industry. Professor Sadie had suggested measures whereby it would be possible to maximise the impact of secondary industry and he had not shied away from suggesting action which might be anathema to some people present—namely control of industry and pressures to rationalise it and ensure standardisation—and above all, the merging of manufacturing units in order to secure economies of scale. Mr. Bertram pointed out that a number of Rhodesia's "pioneer" industries had been taken over by larger international concerns so that the pioneer industrialist found himself in a rather similar position to the prospectors who first discovered mineral deposits.

One of the most important aspects of Professor Sadie's arguments was his recognition of the factors limiting the growth of industry. Mr. Bertram said he particularly appreciated Professor Sadie's reference to the inexorable limits to import substitution. This, he felt, was something that had tended to be overlooked in Rhodesia recently. This did point to the necessity of stopping to take a look at the situation—to ensure that we were on the right lines, to see whether the time might not have come for some small shift of course.